Appendix B. Example of the BMS Configuration

Figures 16–23 demonstrate the BMS configuration when interfaced with the components of the multipurpose test facility. First, the BMS is connected to the power supply and the profile setup wizard button is pushed. The battery type used in the METF (Calb “40 Ah” Gray Cells) should be found and selected from the list. Then, the details on the current sensor in the METF (LEM DHAB S/24 “+/-500A”) should be found and selected as seen in Figure 16. After that, click the configuration cells button and then the automatically populate button; all the cells (27) on the list should be found, as shown in Figure 17. When the window of the Cell population settings is closed (in order to go to the next settings step), a new window appears asking to accept the override, as seen in Figure 18. Click “I Accept”, and then follow all other prompts until finished. When clicking finish, a confirmation of the basic settings will appear as shown in Figure 19. Click “Yes” and a warning window can appear as shown in Figure 20; click “I Accept” then again, another warning as shown in Figure 21; select continue then a conditional window as shown in Figure 22 appears; select “I Agree”. Now, the cells in live cell data can be seen (see Figure 23). The data settings (profile) in the BMS can be saved to disk. In order to do so, the user can go to (File) and select (Save Profile to Disk), then a box will come up that will let the user choose where to save the file to and the file name.

In some cases, after finishing the cells configuration setup, the pre-adjusted values can be changed during the setting process. For instance, the adjusted values in the battery profile before configuration (as marked in blue circles in Figures 16, 17, 18) have been changed into different values (as circled in red in Figures 19, 20, 21). The changes in the basic settings can be summarised as follows:

1. The back voltage mismatch threshold (changed from 5 V into 150 V, Figures 16 and 19).
2. The maximum Amperage voltage while charging (changed from 6 A into 18 A, Figures 17 and 20).
3. The maximum discharged limit (changed from 60 A into 120 A, Figures 18 and 21).
4. The maximum analog output DCL (changed from 60 A into 120 A, Figures 18 and 21).

Following the information on the above mentioned figures, it is possible to bring back the values that have been changed during the setup wizard and run the charger, such action will not affect the batteries. However, an error code (Trouble codes detected) can appear. If this error code permanently appears, the busbars on the batteries should be looked to make sure they are tight. A loose busbar will cause lots of problems and possible arcing.

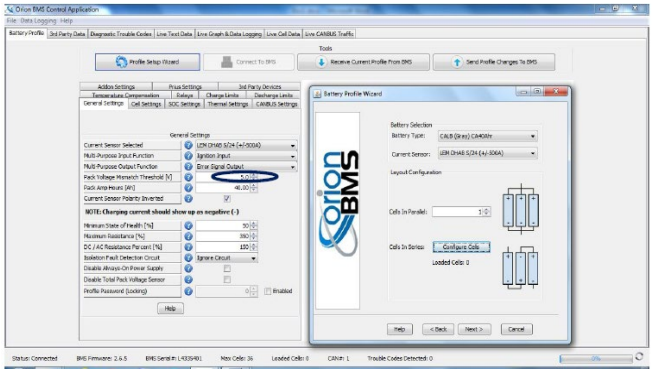

Figure 16: Selection of battery type and current sensor

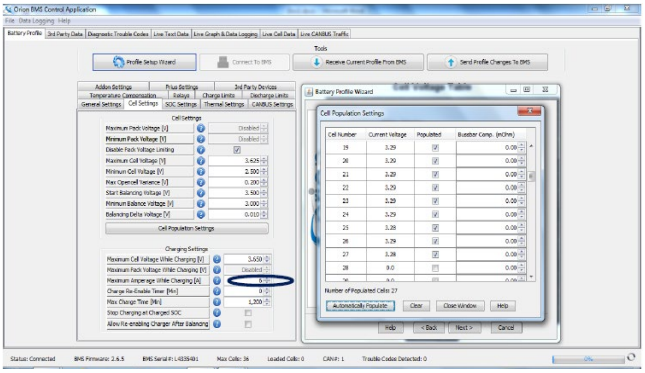

Figure 17: List of the cells (27) in the MEFT

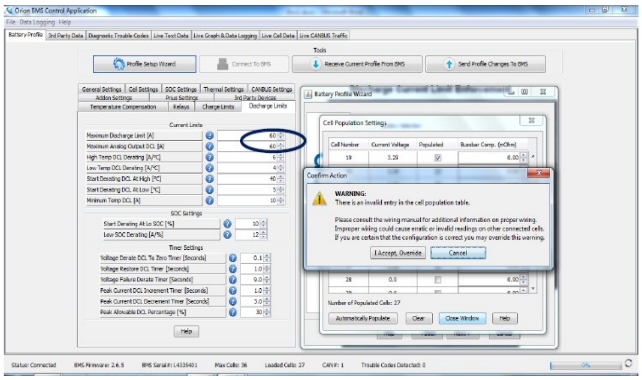

Figure 18: Accept the override

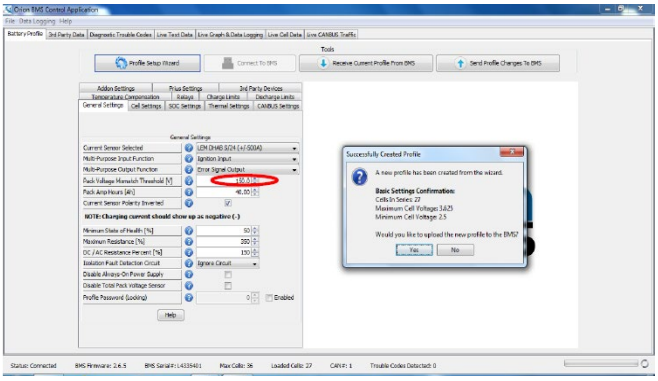

Figure 19: Confirmation of the basic settings

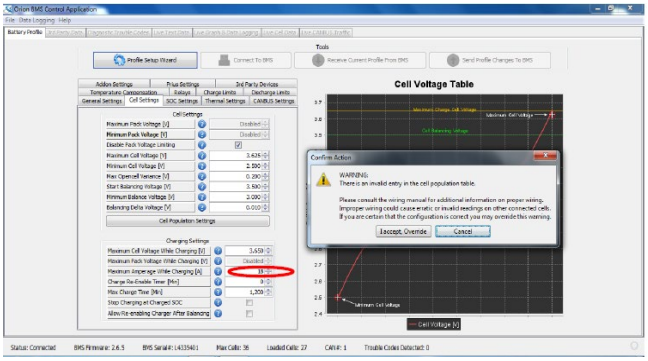

Figure 20: Warning window to accept

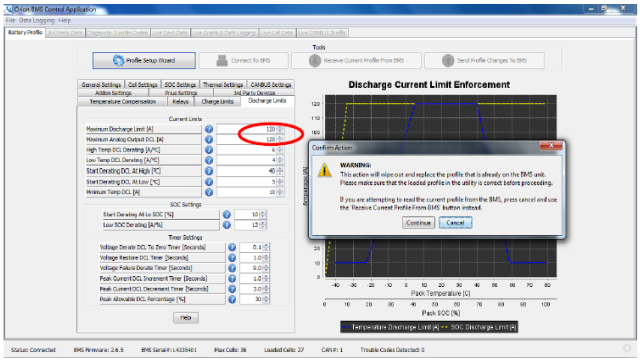

Figure 21: Warning window to continue

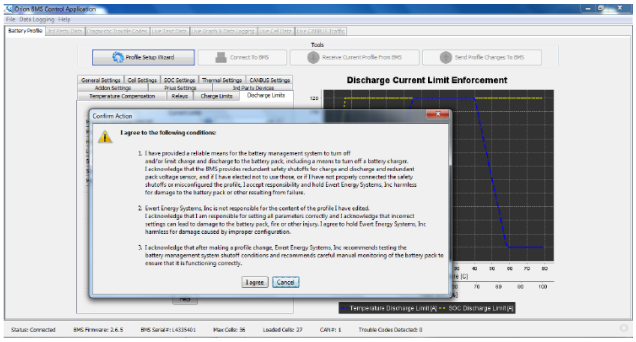

Figure 22: Conditional window

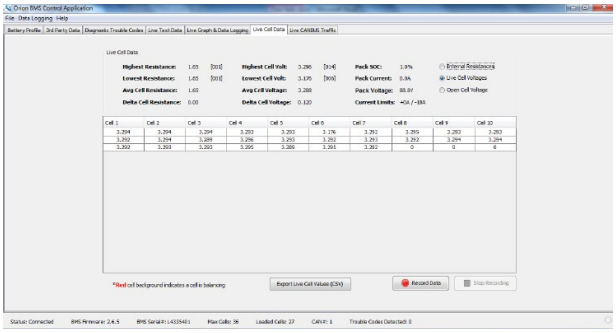

Figure 23: All cells (27) in Live Cell Data

Appendix C. Default setting of charging system

The data in the utility profile uploaded to the BMS can be saved as default values. After loading this utility profile to the BMS, the charging system will be ready for use. Just hook up the charger and start testing things and check everything is up and running. Figures 24–35 depict the screen shots of a system parameters setup.

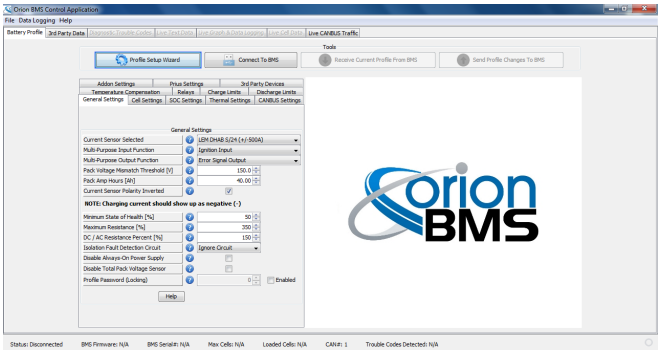

Figure 24: General setting

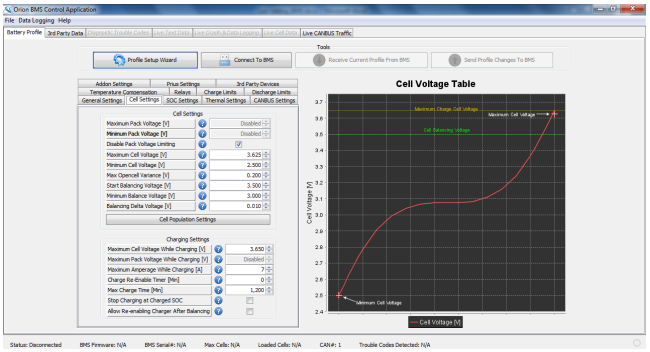

Figure 25: Cell setting

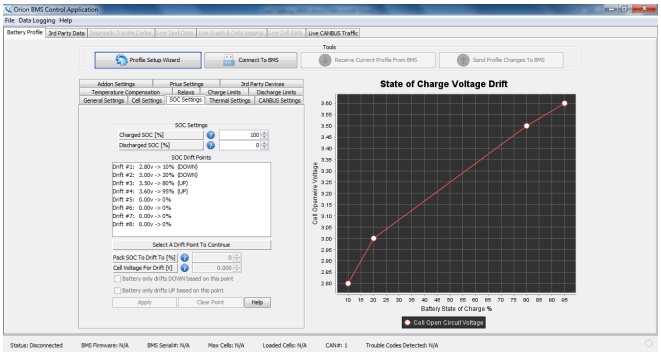

Figure 26: SOC setting

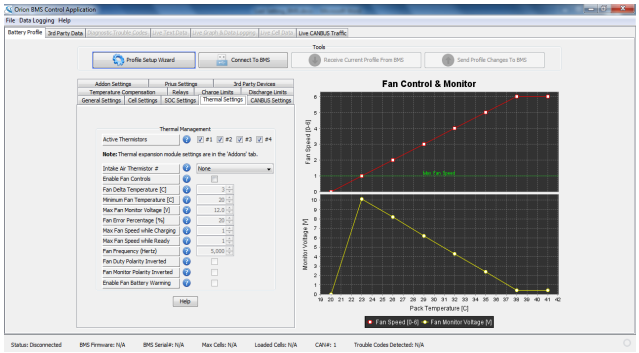

Figure 27: Thermal setting

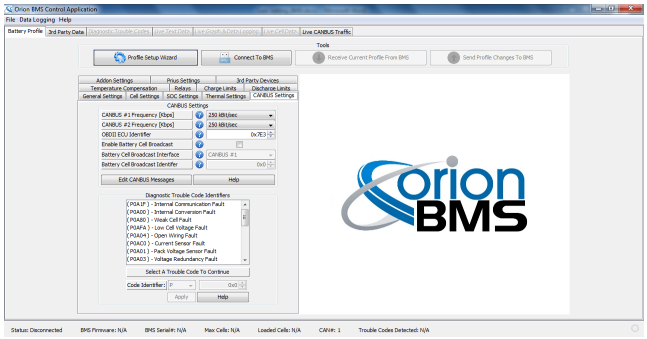

Figure 28: CAN bus setting

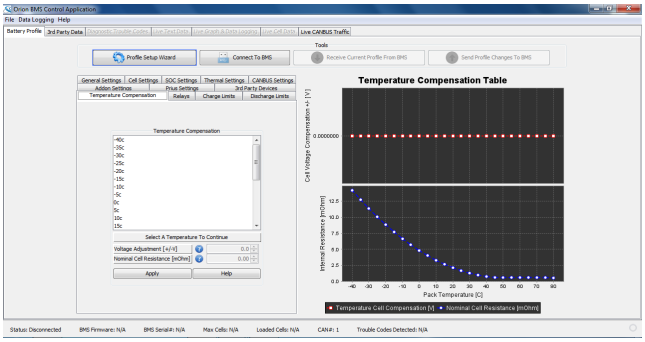

Figure 29: Temperature compensation

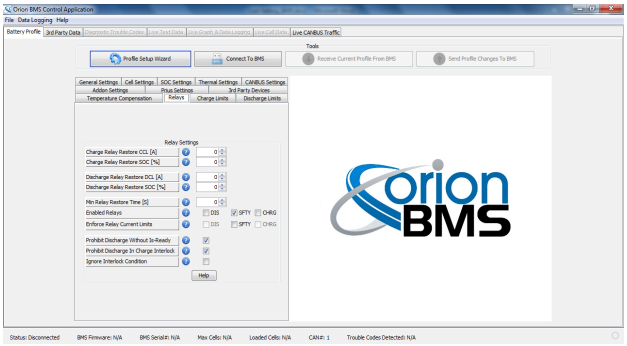

Figure 30: Relay setting

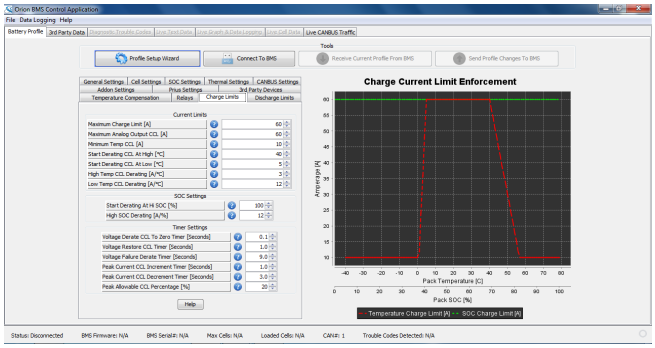

Figure 31: Charge limit

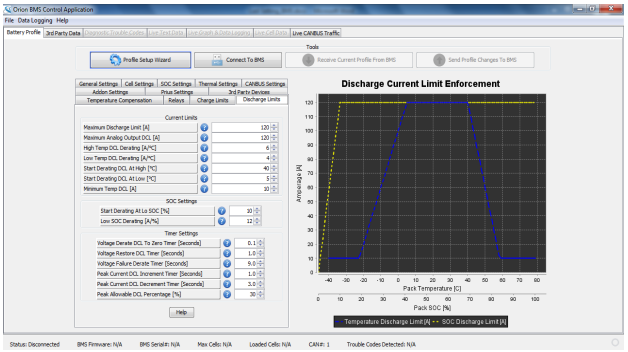

Figure 32: Discharge limit

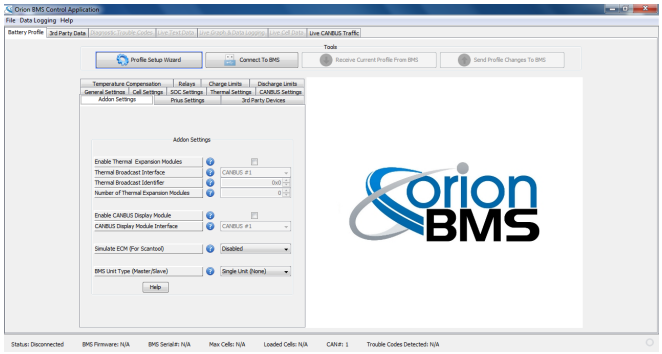

Figure 33: Addon setting

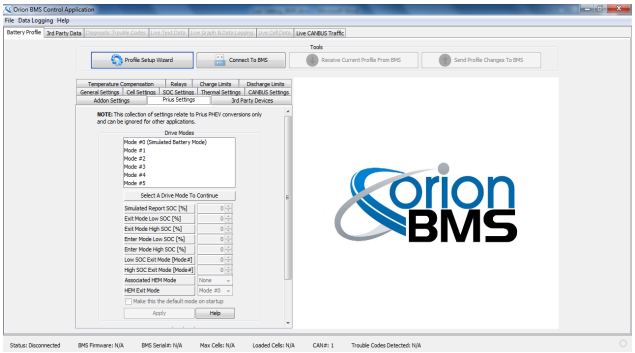

Figure 34: Prius setting

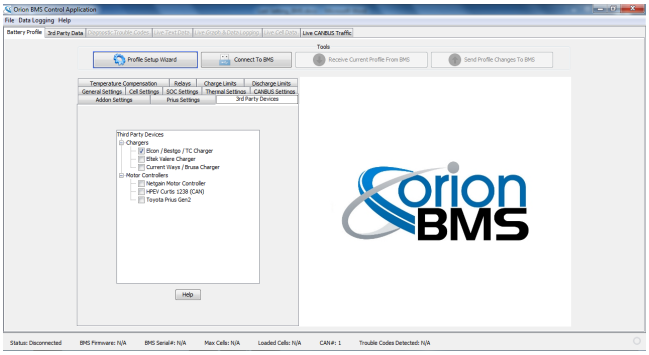

Figure 35: Third party setting